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ABSTRACT

This paper analyzes the feasibility and likelihood of the implementations of recommendations in three papers: "Understanding Intelligence: What's in It for Educators?" (Robert J. Sternberg and Richard K. Wagner); "Motivating Students to Learn: A Lifelong Perspective" (Deborah J. Stipek); and "Academic Work" (Walter Doyle). Provided are summaries of all three papers and outlines of the major points which are either direct or indirect recommendations. Conclusions of the analysis include: (1) All three presentations do an "outstanding" job of summarizing the appropriate research and pointing educators in directions which the research seems to indicate; and (2) Many of the recommendations are characterized by less than precise directions of either what is to be done, or how such recommendations are to be implemented. (JM)

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ED227103

INTELLIGENCE, MOTIVATION, AND THE QUANTITY AND QUALITY OF ACADEMIC WORK AND THEIR IMPACTS ON THE LEARNING OF STUDENTS: A PRACTITIONER'S REACTION

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by

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Nature of the Charge to the Discussant

The basic goal of the symposium is ". . . . . to understand separately and together the contribution to the production of student achievement of intelligence, academic motivation, and the quality and quantity of academic work. . . . . to understand some points of access and the nature of interventions that would directly or indirectly affect the student's cognitive processes, motivation, and academic work. . . . . have a reasonable notion of the development (K-16) and the nature of learning as a cognitive (intelligent) process, the circumstances under which students are willing (motivated) to perform the work of learning and the nature of the work they must perform against the work (study) methods they use or are provided to perform it. . . . .(to understand) the characteristics of the students themselves which cause or govern achievement, which among these characteristics is susceptible to change and improvement, and what form might such interventions take which are consistent with the learning process?"

In the symposium the three panelists will each present a major segment addressing the overall charge. Sternberg will deal with inteligence and its impact on learning; Stipek will present information on academic motivation as it affects learning; and Doyle will analyze the quality and quantity of academic work as they impact learning.

The discussants have the role of responding or reacting to the panel presentations, both in terms of an evaluation of the data and recommendations, and in terms of possible alternative conclusions. Each discussant will bring to the symposium his own expertise and experience.

The impact of each discussant's presentation will be highly reflective of what the discussant brings to the program in terms of both experience and knowledge. In the case of this discussant that is highly likely to produce a very noticeable and perhaps unusual perspective.

This particular discussant will bring to the symposium a lifetime of experience as an educational practitioner. As summarized in his vita, the reader will note extensive service as a teacher, site administrator, curriculum developer, and central office administrator. While the discussant has reasonable academic credentials, and even some experience at the university teaching level, the perspective which will undoubtedly emerge is that of the pragmatic practitioner in the role of encouraging and developing learning among young people in the K-12 age bracket.

How This Discussant Plans to Perform His Role

In playing his assigned role as a discussant in this symposium, the writer had to develop a strategy by which this could be done in some meaningful way which would maximize the bringing to bear of what he has to offer in terms of background and experience, while not attempting unduly to enter areas for which his record would ill equip him. Mrs. Larsen indicated to the discussant that she hoped that he would bring his capacity as a realist and a pragmatic thinker to the symposium. Thus, the basic focus of this response will be one of reacting to the feasibility and likelihood of the implementation of the major direct and indirect recommendations of the panelists. Except to a very minor degree, there will be little attempt in this presentation to react to the accuracy, appropriateness, or expert knowledge involved in the research summaries which are a major part of each of the three panelist's presentation.

In order to follow the described strategy the discussant first carefully read and reread all three papers. Additional special attention was given to the two (Stipek and Doyle) for which summaries were provided. The discussant then outlined major points of each of the papers with an emphasis on those points which were perceived to be direct or indirect recommendations.

The discussant then carefully evaluated each of the major direct and indirect recommendations in terms of perceived feasibility and likelihood of accomplishment. Feasibility was defined as mechanically possible given the right resources, teacher training, etc., and likelihood was defined as the degree to which it was probable that all the necessary things could be done to bring about implementation.

The commission, in using this evaluation, should be aware that both feasibility and likelihood are determined by the discussant against things as they are and as they have been in public education in this nation. It is highly possible and even probable that major changes in the overall process could cause a drastic revision in some of the writer's determinations of feasibility and likelihood, most probably in the direction of making some of them more likely and of greater feasibility.

As a footnote to the question of both feasibility and likelihood, some of the recommendations contained in the panelists' papers were rather sketchily drawn so as to make it very difficult to determine exactly what and how they were to be done. This made determination of either feasibility or likelihood most difficult to ascertain. On recommendations of this type the discussant had a tendency to indicate them as being both unfeasible and unlikely. It is hoped that the panelists will expand some of these, perhaps enabling the writer's judgment to be more directly based on the recommendation itself, rather than controlled by lack of information or clarity.

Also, this discussant had some difficulty with the propensity of all of the presenters, to a greater or lesser degree, to follow the process of identifying a problem, examing the research, and proposing solutions with little attention to either feasibility or likelihood. Perhaps the presenters did not feel it was their role to deal with the problems of implementation, but their failure to do so in the case of many recommendations does not encourage a practitioner to have great faith in their practicality.

Upon hearing the actual presentations on July 30, 1982, many of the concerns about clarity and definition were resolved. In addition, through the discussion process of the afternoon of that date, positions were clarified to the degree that the discussant found less concern about the feasibility and likelihood of many of the proposals.

Integration of Presentations by the Panelists on July 30, 1982

When the presentations were actually made, the discussant observed that he found no basic fault with the foundation premise of each of the three speakers. The discussant heard Sternberg advocating a thorough understanding of the information processing steps necessary to handle both cognitive and metacognitive skills when planning instruction in the classroom. He heard Stipek indicate that the need for extrinsic motivations in the day-to-day operation in the classroom should not override the possibility of building intrinsic motivation for more long lasting learning. Finally, he heard Doyle caution the listeners to be aware of the complexities of the classroom when planning the quantity and quality of academic work.

The discussant did not wish to make his response overly negative. As a person who sees himself as a facilitator of new ideas, he did not wish to read like a classic list of 15 ways to put down any new ideas. He did not wish to appear over pessimistic when several of the presenters who were so optimistic in their indications of the potential success of their recommendations. Thus, he was pleased that he could concur with the basic thrust of all three of the panelists. However, even after clarification, discussion, and thorough examination, he found some of the recommendations basically lacking in feasibility and/or very weak in the likelihood of their adoption.

Summary of Direct and Indirect Recommendations and Assessment of Feasibility and Likelihood

In reviewing the written documents, the discussant analyzed each perceived recommendation of each of the three panelists in terms of feasibility and likelihood. What follows is a modified version of that analysis, revised on the basis of the process which occurred on July 30.

Sternberg

Process training - The panelist calls for specific information-processing components to be trained, and for the components specified to have been experimentally verified as truly involved in task performance. This is feasible to the extent that such process steps have been identified and that means have been developed to teach them. The feasibility breaks down in cases where such things do not exist, either because the process steps have not been (and perhaps cannot be) identified as well as cases where they have not been verified experimentally. In terms of likelihood, this can readily be done (and is being done many places) for the simpler and more readily identifiable processes. However, the more complex or obtuse the nature of the possible processes involved, the less likelihood there is of acceptance and implementation.

Socio-culturally relevant - Here, the call is for socio-cultural relevance in terms of the underlying theory of intellectual performance in relationship to the individuals who are exposed to the training program based on the theory. The insistence on socio-cultural relevance is not a new idea, but it has proved most elusive of implementation. Its feasibility is in direct proportion to the ability of program designers to identify what is socio-culturally relevant, and, generally, they have missed the mark. Students (not to mention parents) do not readily accept what they perceive to be a program which is "inferior" to that offered to other students. Thus, in terms of feasibility, we will have to get more precise in our identification, do a better job communicating to parents and students, and develop programs which are different but not perceived as inferior. Any question of likelihood "hangs up" upon solving some of the feasibility problems. If they can be corrected, then the chances of actual implementation improve.

Training in both executive and non-executive information processing, as well as interaction between the two - This constitutes in the mind of the discussant one of the most significant recommendations in any of the presentations. Especially in the need for the executive (metacognitive) skills and the mix

with regular cognitive skills the recommendation is an excellent one. Feasibility is the problem here, regardless of the validty of the identified need. As the presenter indicates, metacognitive skills are very difficult to teach and may not be readily (or even basically) fully attainable by some students. The presenter implies that the ability to develop and use such skills may be a measure of higher intelligence and a discriminator which separates the more able from the less able. Obviously, we need some answers to the questions and problems raised about metacognitive skills before we can proceed to a mass program skillfully mixing them with regular cognitive skills.

Responsive to motivational as well as to intellectual needs - The desirability and even necessity to get students to do the proper things and to even want to of their own accord addresses the age-old topic of motivation. Since Stipek pursues this topic in much greater depth in her paper, the discussant will not comment upon it in the context of Sternberg's recommendation.

Sensitive to individual differences - The differences in rate and style of learning and task performance is another problem which has been with us for many years. That a good training program must take this into account is axiomatic. However, we have not been notably successful over the years in finding feasible means in our normal classroom setting for enough individualization to occur. Instead, we settle for very little. Differences in learning speed seem to be easier to address than differences in learning style. Both feasibility and likelihood seem circumscribed by the mechanical problems of the elementary teacher with 35 students and the secondary teacher with 175 students per day. Finding means and materials to meet the individual needs of students in terms of both speed and style seems overwhelming. The presenter recommended dealing with only one or two variables. Unless many of the constraints produced by such numerical relationships can be modified (and reducing class size from 35 to 25 will not do it) or unless we can overcome some of the problems and prejudices of homogeneous grouping, such individualization remains a direction to be worked toward. It is possible, however, to address a few of the major variables.

Furnish links between training and real world behavior - The necessity to build such links is recognized by the panelist as essential to achieve real-world performance on their own on the part of students. The word "links" is used with great facility (but unfortunately without clear definition or explanation) to describe what is sought. How to build such links, when as the panelist states: "...how difficult it is to obtain transfer even across laboratory tasks," is not

even hinted at in the paper. Until such links are amplified and then made capable of operation, this recommendation cannot be either very feasible or very likely.

Careful empirial evaluation - The panelist identifies one of the great problems of educational research, as contrasted with scientific research. Having invested time and resources in developing an experimental program, most educational establishments, no matter at what level, are most reluctant to admit that the program did not succeed. Thus, the literature is filled to overflowing with numerous experimental studies designed to solve all of the major problems facing education, including all of the problems identified today, and yet when others replicate the proposed solutions to address the same problems in their own area, they often do not work. If even one-tenth of the research studies represented the success described, we would not need this symposium and we probably wouldn't need the commission. It is feasible to conduct research, honestly evaluate it, determine what aspects have failed, what aspects have succeeded, and what aspects, if any, deserve future development. However, unless educational institutions at all levels change their previous practices, this is not very likely to happen. Perhaps they need to take a leaf from the book as presented by Stipek in another context, namely, that errors are a part of learning.

Stipek

Evaluating by mastery rather than a normative standard - The panelist raises the age-old question of whether a student should be evaluated against others or against him/herself. It is often more motivating, and it is certainly more rewarding for low achievers, to be evaluated against him/herself. An emphasis on mastery addresses this concern. This approach is quite feasible, and as a matter of fact, is widely used, including wide expansion in the new mastery learning programs. The basic problem is one of likelihood. The public, most parents, and many students want to know how students compare to others. Using mastery standards rather than norms is perceived by some to be demeaning, especially when used with educationally or culturally disadvantaged youth. If a way could be found to overcome this, likelihood would increase. Also, the presenter's definition of the mastery standard to be followed (something above their current performance level) does not provide very clear guidelines for the design of curriculum or for the implementation of meaningful instructional strategies as one does not know what one is designing for.

Minimizing salient public evidence of individual children's performance - This is a recommendation aimed at reducing the perceived negative impact of competition and thus minimizing the negative self-image often produced in lower achievers and also enabling the student to build confidence in his/her own competence. This is quite feasible and has been used by a sizeable minority of teachers and schools over some period of time. However, the lack of likelihood of immediate implementation is dictated by the same factors which have prevented it from becoming a strategy used in many classrooms by a majority of teachers. These factors are similar to those interferring with a mastery rather than a normative approach as described above, and also includes widespread belief, as stated by Stipek, that since the world is competitive, proper preparation of students includes learning in a competitive atmosphere. To make implementation likely, the public, parents, and the majority of teachers will have to become convinced, as Stipek is, that "the benefits of competition in our society are seriously overrated, that cooperation is more likely to further an indvidual's aspirations than competitiveness."

Providing opportunities for all children to demonstrate competence in an activity that is publically valued by the teacher - Here is another approach to the desirable goal of building self-esteem and a positive opinion of competence within the student. Here, feasibility is much higher in settings where the teacher interacts with a relatively small group of students over a long time period in a wide range of activities. The typical self-contained elementary classroom offers good opportunity for this. On the other hand, in situations where the groups are larger, where the time is restricted, and where the variety and type of activity are more limited, such as in most specialized secondary classrooms, the feasibility of following this course of action is much lower. In addition, most of us in teacher training saw the classic film produced at Iowa State on the subject of classroom motivation where you found an activity for which each student could know success. Unfortunately, it has been the experience of the discussant that for some students one is torn between the choices of having no successess to compliment, or of trivializing the nature of activities for which one can compliment. The former does not meet the need; the latter is often readily recognized by the student for what it is, and fools no one. In addition, the same factors affecting feasibility also impact likelihood. Thus, it is quite likely that this can be done to a degree in some classrooms, but it is extremely unlikely in many others.

Considering errors as a normal aspect of mastering new skills - This recommendation is a most significant one, and one where the explanations presented by Stipek drive home effectively the mishandling of errors in many classroom situations. It is quite feasible to place errors in the classroom in a much more positive context, as many teachers do already, and it is certainly likely, given the proper information, that many more teachers will do so.

Intrinsic rather than extrinsic motivation - This is certainly the overriding recommendation of Stipek's presentation. Almost all recommendations of hers would seem to be means to the overall end of developing intrinsic motivation for learning so that students will work without immediate direction, will work outside the school setting, and will work in the future, higher level educational situations where extrinsic motivation often does not exist. It is not the purpose of the discussant to discuss the merits of intrinsic vs. extrinsic motivation in school, but rather to examine the feasibility and likelihood of the development of intrinsic motivation as the major thrust for learning in our schools. However, I cannot help but comment in passing that given our lack of success in building intrinsic motivation in many students, in the nature of a society where extrinsic motivation seems to operate at least as frequently as intrinsic, and in our lack of knowledge about what may intrinsically motivate each individual, we may be pursuing a course of action which is not the only, or even the best way, to go. In terms of feasibility, the great drawbacks would seem to be problems with determining how to develop intrinsic motivation (as contrasted with using what already exists), with determining what intrinsically motivates a wide variety of youthful human beings in order to build upon it, and the problem of moving students in directions they should go if they are not intrinsically motivated to go there. Likelihood is, of course, directly related to feasibility. The idea of producing self-actuated human beings is very appealing if the problems of how to do it could be solved. The presenter's clarification of this point in terms of not seeking to banish all extrinsic motivation, but only to prevent it from overriding any success with intrinsic motivation softens the discussant's concerns, but it does not provide answers to the unanswered "how to?" question.

The development of a John Deweyish Open Classroom model - Stipek seems to find actualization for her conclusions concerning motivation in the classroom setting in the structure first advocated by John Dewey and characterized in more recent years by the concept of the "Open Classroom." Theoretically, such models

would meet all of the needs identified by Stipek as necessary for proper motivation in the classroom. One can first react with a question: These ideas and theories, formed into a classroom structure and mode of operation, have been widely used over a period of 50 years. If this is the answer to motivation in the classroom, why have these attempts at implementation not been maintained? It is certainly feasible to develop such classrooms. Numerous school districts all over the nation over more than 50 years have done so, and the "Open Classroom" movement of the 1960s resulted in thousands more. The discussant's school district built whole new schools to physically accomodate this approach. However, likelihood would only be great if educators, the public, parents, and others could be convinced that such classrooms could really deliver the motivation promised. That they have so far consistently failed to do so would seem to make implementation soon highly unlikely.

Doyle

Direct instruction in identified cognitive processes and knowlege structures - This instructional model is recommended by the panelist as being appropriate for the teaching of novices, low ability students, and pupils in the early memory grades. This is thoroughly compatible with the discussant's experience, and it is completely agreed that it is quite feasible. Likelihood would seem to revolve around the question of teacher and school district determination of the use of this strategy at appropriate times and with appropriate students, and the use of other strategies when this strategy is not called for.

Combining direct instruction with either direct or indirect instruction in executive processes - This is basically the same proposal as that made by Sternberg with the added embellishment of direct and indirect instruction. It has the same strengths and weaknesses as that recommendation in terms of both feasibility and likelihood. That this can and will be done to a degree is highly likely, but the greater the need for indirect and executive type skills, the fewer students we seem able to reach.

Practice in higher-level executive routines - This strategy would seem to be essential in reaching the levels of excellence sought by all in education. However, the solutions seem to run aground on the twin shoals of lack of knowledge in how to teach this and the nagging feeling, validated by some research, that this is above the level of many students. Thus, feasibility is very high for some students and some situations, but quite low for others. The overall question of likelihood seems to divide itself in the same way. We seem

to be able to assist some students in learning these executive strategies, and others, including many adults, never seem to grasp them at all. Perhaps we need more research into whether this is even possible, and, if so, what are some meaningful instructional strategies. In addition, we should not ignore the role of modeling by the teacher of the higher cognitive strategies and skills to help the students gain insight into these processes.

Development of the student's own solution strategies - As Doyle perceptively indicates, this is a highly desirable objective, and is perhaps the only way to enable students to attack certain kinds of academic challenges for which a fully developed formal strategy does not exist or cannot be taught. Having identified this objective, Doyle prescribes corrective feedback as the means by which the teacher can prevent the student from moving in the direction of "buggy" algorithms and misconceptions of conduct. The process would seem to be feasible with a thorough analysis of each step of the teaching process used by the teacher in the classroom, but the major drawback in terms of likelihood would seem to be this very need for intensive analysis and planning on the part of the teacher, which few seem to practice for reasons ranging from ignorance to the fact that it is a lot of work.

Domain - specific knowledge in a discipline - This is probably the recommendation in all the papers which is currently the closest to being in full implementation. However, the education profession has a long way to go in terms of selecting the most significant portions of each discipline in order to establish a "bottom line" conceptual base for mastery by all students. There is still too much of a tendency to "shotgun" the approach to domain-specific knowledge so that few students emerge with some comprehensible whole upon which to base future learning. The addressing of this strategy is very feasible in terms of meeting the general direction, but is less so when greater specificity and organization are sought. Likelihood is also high for the general direction, but the likelihood of greater precision must await some of the hard work of selectivity. Programs such as our Achievment Goals Program combining the teaching of reading comprehension skills with the teaching of social studies concepts and skills is an example of how this process can be practically applied to the use of domain-specific materials.

Design of instructional materials to reflect academic tasks - Doyle properly identifies one of the major problems in the proper development of academic tasks in the classroom as being one of instructional materials. Current materials, designed for mass market and, of necessity, covering a wide variety of perceived

instructional needs (not to mention trying not to offend anyone) do not appropriately focus on the basic academic task of many classrooms. There are also not sufficient commercially published materials to meet the variety of learning needs in terms of learning styles, speed, etc. that would be necessary if the materials were to meet the needs of all students. The feasibility and likelihood of this being corrected by commercial publishers is not very great. The necessities of marketing and volume production alone will probably prevent it. It is feasible for districts having enough expertise and the resource support necessary to design many needed materials which more truly reflect classroom needs for the teaching of academic tasks to varying populations of students. The likelihood of this happening, except under great pressure, is not great because of the propensity to use commercial materials and the reluctance to undergo the initial expense of proceeding in this direction.

Improved training of teachers to provide for creative ways to deal with accountability and to think about academic work in cognitive terms - Coupled with the proposal for improved materials comes this recommendation for improved training. That this is badly needed is not denied by the discussant, but there is a concern that the strategies to meet the criteria outlined for what needs to be improved do not exist to teach to the teachers. That it is feasible to teach at least the strategies which we do know and additionally those which can be developed to teachers in training goes without saying. The likelihood of this happening is also great. However, the major problem here is not the training of teachers-to-be, but what to do about the hundreds of thousands of teachers already in place in school districts where enrollments are declining and where the opportunity to use new teachers is even more limited than usual. The feasibility of retraining all of these experienced teachers, not to mention likelihood, is chancy at best.

Direct instruction - As is the case with both of the other panelists, Doyle recommends direct instruction for basic skills, especially in levels such as elementary and junior high schools. Research has shown that this is efficient for such academic tasks and is an effective classroom management tool. The feasibility of this is great; in the discussant's own district intensive work has been done with direct instruction. The likelihood is a more tenuous thing in that direct instruction requires careful organization and appropriate materials, and many schools and teachers have not seen fit to move in the direction of direct instruction. Also, Doyle's definition of direct instruction would seem to be unduly limited and basic as compared with the discussant's and others'

understanding of the process. Many higher level processes, including the use of teacher modeling, can use a process of direct instruction. Such instruction is a process, not a content.

Indirect instruction - Doyle reminds us, as have both of the other panelists, that indirect instruction is much more difficult to manage than direct instruction. We might as well admit that we do not know if it can be done thoroughly, especially with some students. As previously concluded by the discussant, the feasibility and likelihood of movement in this direction is great, but full and true implementation involves answers to some questions which we currently do not have.

Greater research - One of the major recommendations of this entire program is contained in Doyle's conclusion where he calls for greater research into "the event structures of classrooms and how work is accomplished in these environments." So many of the research findings reported by all of the panelists seem to point us in certain directions for classroom implementation. However, in many cases, we do not know if such directions can be implemented, given the nature of what is possible in classroom settings. It is the opinion of the discussant that it is feasible to expand research in this area. The likelihood will depend on the priorities given to this work by the personnel and institutions involved, and by the recommendations of such groups as the commission.

Summary

It has been the privilge of the discussant to review three expert presentations on intelligence, motivation, the quality and quantity of academic work, and how these three areas impact upon classroom instruction. All three of the presentations do an outstanding job summarizing the appropriate research and pointing educators in directions which the research seems to indicate. That many of the recommendations are limited to pointing in certain directions is probably due to lack of expertise on classroom implementation on the part of some of the presenters, on a perception of their respective roles, and in many cases, on the lack of implementation research from which they can draw. Thus, many of the recommendations are characterized by less than precise directions of either what is to be done, or how such recommendations are to be implemented.

A good example of the discussant's concern with this lack of attention to implementation is the recommendation which all three panelists made in common, albeit from slightly different bases and with minor variations. This is the recommendation concerning the need to teach both basic cognitive skills, meta-cognitive (executive, indirect) skills and develop a good relationship between

them. All cite the research which indicates how necessary it is to move from the basic to the executive in order for the student to handle most higher level learning. All also cite the perceived difficulty in doing it. Several imply that it may not be fully possible for all students (or even for many students), yet the call is to do it. None do more than hint at what is to be done or how the difficulties are to be overcome. It would seem to the discussant that we need additional research to determine the degree to which this is possible for most students before we move to implement it in the classroom.

Perhaps the discussant is confused as to the role of the panelists, but as an educational practitioner, if someone recommends a course of action, the discussant wants the answers to at least three questions:

1. Why should we do it?
2. What is it that is really being recommended?
3. How shall we really do (implement) it?

All three panelists have usually answered for the discussant the first question, although the discussant may not always agree with the reasoning. The answers to the second are obscured; they range from general hints of direction to some (especially in Doyle's presentation) much more specific proposals, although all of the panelists clarified many of these recommendations in the discussion sessions on July 30. The answer to the third question is notable by its absence in almost all of the recommendations from all three panelists.

To the discussant the panel presentations have served a very valuable purpose by providing a careful analysis of research by experts in the field and have provided some directions toward which education should move. What is now needed is a careful examination and extensive experimentation to determine if the directions recommended are really capable of implementation on any mass basis in the schools of the nation. The discussant suspects that the answers provided by the research, even if it indeed is done, will vary between complete feasibility and absolute impossibility.

Prior to the conduct of more extensive experimentation the discussant is left with his own analysis of feasibility and likelihood which is colored both by his experiences and by the lack of specificity of some of the recommendations. As revealed in this presentation, that analysis is more negative than the discussant would have liked. It is the hope of the discussant that just as additional clarification by the panelists took place, the called-for research will result in a more positive overall assessment of the recommendations, and will enable the commission members to more fully evaluate their efficacy.

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VITA

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Personal: Born, Wahoo, Nebraska, 1930. Married. Four children: Paulette, 27; Christopher, 26; Charlie, 23; Monty, 18. Two grandchildren.

Education: B.A. in History with honors and distinction, SDSC, 1951.
M.A. in Educational Administration (Curriculum), SDSU, 1963.
Additional graduate work at SDSU.

Professional:
- -Teacher of history and government, and director of student activities, Hoover High School, 1953-1962.
- -District resource teacher, secondary social studies, 1962-1965.
- -Acting specialist in social studies, 1965-1966.
- -Curriculum consultant, secondary social studies, 1966-1968.
- -Vice principal, Mann Junior High School, 1968-1971.
- -Vice principal, Muirlands Junior High School, 1971-1975.
- -Principal, Lewis Junior High School, 1975-1980.
- -Current assignment, 1980 to present.
- -Teacher of Citizenship for Naturalization, 1956-1966.
- -Author of numerous curriculum publications, 1958-1968.
- -Associate director of NSF Institute in Economics at SDSU, summers of 1967, 1968, 1969.
- -Associate director, San Diego State University Center for Economic Education, 1969-1974.
- -President, Center for Economic Research, Education, and Communication, 1974 to present.
- -Teacher on special assignment, Systems and Procedures, 1961.
- -Vice principal on special assignment 1970-71.
- -Instructor in economic education, SDSU, 1969-1974.
- -Instructor in educational systems and procedures, SDUSD and Corrigan and Associates, 1971-1974.
- -Advisor, San Diego Association of Student Councils, 1962-1968.

Honors: Graduate with honors and distinction in history, Blue Key; Phi Delta Kappa (honorary ed.); Kappa Delta Pi (honorary ed.); Phi Alpha Theta (honorary history); Freedoms Foundation Valley Forge Classroom Teacher's Medal; Key to the City by Mayor Curran of San Diego; Award from City Beautiful; PTA Honorary Service Award; ACSA Distinguished Service Award; Follett 1981 Social Studies Consortium.

Organizations: Founding president, San Diego County Council for the Social Studies; California Council for the Social Studies; National Council for the Social Studies; SDTA Council and Building Representative; CTA; NEA; CCSSA; ACSA; San Diego Administrators Association, president; ACSA Region 18, president elect; ACSA State Urban Affairs Committee; ACSA Representative Assembly; Presbyterian Church, elder; YMCA; BSA; AYSO; Little League; Pony League; Colt League; Freedoms Foundation; San Diego United Nations Education Committee; San Diego City/County Energy Education Committee; Project Yes.

Publications and Presentations:

-Numerous curriculum publications in the fields of social studies, economics, student government, and educational systems, 1958-1974.
-Co-author Analyzing World Systems (economics and the environment), currently under development.
-Speaker at SDCCS, CCSS, NCSS, SDTA, CTA, ACSA, ACSA Region 18, NASSP, NASSP-NAESP Joint Urban Conference, California Association of Humane Officers, Scottish Rite Masonic Order, etc., conferences and meetings on social studies, economics, and school operations topics.
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